The Estate of Chemetco, Inc.

Hartford, Illinois

STORMWATER MANAGEMENT PLAN

November 20, 2008

Prepared by: Gary J. Davis, CHMM

EH&S Manager

Responsible Party for Preparation of this Stormwater Pollution Prevention Plan.

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Estate of Chemetco, Inc.

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1. Introduction

Chemetco, Inc. ("Chemetco") ceased operations on October 31, 2001 and filed for Chapter 7 bankruptcy protection on November 13, 2001. The U. S. Bankruptcy Court for the Southern District of Illinois appointed Laura K. Grandy, 23 Public Square, Suite 300, Belleville, Illinois 62222 as Trustee to administer the Bankruptcy Estate of Chemetco, Inc. ("Estate").

The 41 acre smelter site, which is fenced, and the approximately 200 acres of adjacent land are under an Administrative Seal Order #119801003-Madison County, ILD048843809("Seal Order") issued by the Illinois Environmental Protection Agency ("IEPA"), dated: December 4, 2001 presented in Attachment A1.

On September 16, 2008, the Estate entered an Interim Order in the Matter of the United States and the People of the State of Illinois v. Chemetco, Inc., Civil Case No. 00-670-DRH, 00-677-DRH (consolidated) ("Interim Order")that required that the stormwater plan be updated as part of an Operation and Maintenance Plan due to anticipated work to be conducted on the Facility in the near future to ship stockpiles of metal bearing slags and solids off-site for recycling, RCRA Closures, and removal of three of the furnaces for shipment off-site for sale to a smelter in Europe.

2. Background

Chemetco is located at Rt. 3 and Chemetco Lane (formerly Oldenberg Road) near Hartford, Madison County, Illinois in an unincorporated portion of the county as shown on the Site Map presented in Attachment A2. The Facility is located in a primarily agricultural area except for the State of Illinois Lewis & Clark Historic Center and state park to the northwest across Rt. 3. The Cahokia Canal flows east-west just north of the Facility into the Mississippi River approximately 1 mile to the west. South of the smelter site on the Facility is a tributary of Long Lake.

From 1970 until October 31, 2001, Chemetco operated a secondary copper smelter which recycled copper based scrap that was processed in four natural gas fired furnaces to remove impurities and produce an "anode" grade copper plate that was shipped to others for final refining to "cathode" commercial grade standards. As part of the smelting operation, a lead/tin product was produced as an ingot for refining by others off-site. Secondary products from the smelting operations included an iron-silicate slag and zinc oxide rich emissions particulates, called "scrubber sludge" for the manner in which it was removed from the smelter exhaust by wet scrubbing and forming sludge that was dewatered in a filter press for recycling.

Chemetco operated a closed-loop stormwater management system under IEPA Permit No. 1997-EO-3853. Stormwater was collected through a series of concrete lined

ditches and sumps and was pumped to on-site retention basins for storage until water was removed andused as makeup water in the wet scrubber system, slag granulation or the cooling towers. Captured stormwater was stored in either a series of four canals with the smelter site, referred to as the east, west, north and south canals; or the 1,000,000 gallon retention basin southeast of the smelter site and south of Chemetco Lane.

3. Regulatory Requirements

Stormwater management on the smelter site is regulated by:

- Clean Water Act
- 35 ILAC, Subtitle C, Part 304
- NPDES Permit No. IL0025747, 005 Outfall Stormwater Lagoon [Basin], present as Attachment A3.

4. Purpose

The purpose of the Stormwater Management Plan is not to discharge any stormwater that falls on the smelter site that exceeds effluent discharge standards except for the stormwater on the north and east side of the slag piles that are collected by the Perimeter Off-Site System and directed to the Stormwater Basin where overflow is monitored under the NPDES Permit.

5. Description of Stormwater System

a. On-Site System

The current stormwater collection system consists of the following and is confined to the smelter site and the 1,000,000 gallon stormwater basin as shown on the Site Map, presented as Attachment A2.

i. Smelter Site-

Western Edge of Smelter Site (red highlighted area on Site Map): Stormwater which lands on this portion of the site is captured by a shallow concrete ditch on the west side of the facility approximately 750 feet in length. Water in the ditch gravity flows to small collection basin at the north end referred to as the north sump and pump. A series of two Worthington 50 hp pumps transfer the water to the north canal. A valve station is present at the north end of the north canal which enables the Estate to divert flow from the north sump to the east canal if needed. The pumps are designed to operate in either the automatic mode whereby floats in the sump activate the pump or by manual operation. If additional stormwater capacity is needed during time of heavy rainfall, the pumps are operated in the manual mode to all the sumps to fill and create additional storage capacity.

Southwestern Corner of Smelter Site (green highlighted area on Site Map): Stormwater which lands on this portion of the facility is captured by a shallow concrete ditch near the mobile maintenance shop approximately 350 feet in length. Water collected in this ditch gravity drains to a collection sump on the southeastern corner of the mobile maintenance shop. The collection sump referred to as the southeast sump and pump also receives sheet flow from the southwestern corner of the site. A series of two 50 hp Worthington pumps transfer the water through a 10" main to the east canal. If necessary, the water can be routed to the north canal if the east canal is at capacity. Check valves on the mains and piping insure the proper flow direction. The pumps are designed to operate in either the automatic mode whereby floats in the sump activate the pump or by manual operation. If additional stormwater capacity is needed during time of heavy rainfall, the pumps are operated in the manual mode to all the sumps to fill and create additional storage capacity.

Southeastern Edge of Smelter Site (yellow highlighted area on Site Map): Sheet flow from the southeastern edge of the plant is either captured in a small concrete ditch approximately 110' in length inside the fenced area or flows across Chemetco Lane to a ditch on the south side which directs the flow to the 1,000,000 gallon retention basin. Stormwater captured inside the fenced area is pumped to the east canal. If necessary, the water can be routed to the north canal if the east canal is at capacity.

Southern Edge of the Smelter Site (yellow highlighted area on Site Map): The southern edge of the site is bermed with concrete curbing and/or slag to direct flow to either the southwest or southeast sumps.

Zinc Oxide Bunker: Stormwater which falls into the bunker remains within the bunker. Since shutdown, the level of water in the retention area in the southeast corner has never been more than 60% full.

Trapped Stormwater: Since shutdown, a number of areas of the site have a tendency to trap stormwater and have to be manually pumped into the stormwater system, including but not limited to the low areas, trenches, and sumps in the AAF Area which are pumped into the canals when the area floods; low spots in the Foundry Building; and the area between the Dome Building and the Zinc Oxide Bunker.

b. Off-Site Perimeter System-

East and North Edge of Smelter Site (orange highlighted area on Site Map): Runoff from the south and west sides of the slag pile at the northeast corner of the site flows to either the east, west, north or south canals. Runoff from the north and east sides of the slag pile is captured by a collection system consisting of 18" plastic drain tile with inlets installed approximately every 200' outside the site fence on the north and east sides.

1,000,000 Gallon Basin System (blue highlighted area on Site Map): The basin is a fiberglass lined earthen basin that is connected to the perimeter drain system by 18" plastic drain tiles. Since November, 2005 the basin has been subjected to monthly sampling of the water that overflows the banks of the basin under NPDES Permit # IL0025747, Outfall: #005.

i. Stormwater Volume Calculations

1. Calculation of square footage

Location	Total ft^2	Pervious ft^2	Impervious ft^2
Inside the fenced boundary	**1,715,525**	**923,350**	**792,175**

2. Existing Capacity

Area	Retention Volume (in gallons)
East Canal	426,764
West Canal	263,464
South Canal	543,722
North Canal	458,032
Retention Basin	1,000,000
Southwest sump	30,574
Southeast sump	7,705
Northwest sump	90,850
Swimming pool-east of East Canal	120,436
AAF area	24,270
Total	2,958,112

3. Calculated On-Site Stormwater Storage Volume

Rainfall	Average Monthly	Monthly Maximum	Daily Maximum
Rainfall	3.28 inches	8.63 inches	5.59 inches
Less evaporation rate	(1.50 inches)	(1.50 inches)	(0)
Rainfall amount less evaporation rate	1.78 inches	7.13 inches	5.59 inches
Converted to ft	0.15 ft	0.59 ft	0.47 ft
Calculated Runoff Storage Volume Required	(0.15x985,450)(65%) + (0.15x836,575) (30%)x7.5 gals/ft^2 = **1.0 million gallons/mo**	(0.59)(985,450)(65%) + (0.59)(836,575) (30%)x7.5 gals/ft^2 **= 3.94 1.0 million gallons/mo**	(0.15x985,450)(65%) + (0.15x836,575) (30%)x7.5 gals/ft^2 **= 3.13 1.0 million gallons/mo**
Available on site storage	3.0 million gallons	3.0 million gallons	3.0 million gallons

6. Pollution Prevention

As the following sampling data indicates, contaminates in the stormwater stored in the lagoons/canals on the smelter site do not exceed effluent standards except for slightly elevated lead level. The stormwater impacting the north and east sides of the slag piles that is collected in the Off-Site Perimeter System and samples did not exceed effluent standards. The stormwater issue of concern is to contain scrubber sludge (a/k/a zinc oxide).

a. Sampling Data

Shown on the Stormwater Sampling spreadsheet, presented as Attachment A4, are the analytical results of various samplings of stormwater for effluent discharge parameters with the results as follows:

NPDES Sampling – The 12-month running average shows that all parameters are well within effluent standards except for slightly elevated values for pH, COD, and suspended solids.

Lagoons/Canals Sampling – Random sampling of the lagoons indicated that parameters were below effluent standards except for lead being slightly elevated in the East Lagoon.

Spray Water – Random sampling of the spray water that is pumped from the lagoons and used to evaporate stormwater indicated all parameters are well within effluent standards except for slightly elevated values for lead.

b. Materials of Concern

Included below is a list of significant materials/wastes located on the smelter site whose exposure to stormwater impacts stormwater management:

i. Scurbber Sludge (a/k/a, zinc oxide) – granular fine solids generated as emissions particulates from the smelting operation that contain elevated levels of zinc, copper, and lead oxides. Scrubber sludge exhibits toxic characteristics according to TCLP for lead and cadmium. Scrubber sludge is found at the following locations around the site:
    1. On the interior surfaces of the Foundry Building,
    2. Inside the emissions control system located in the AAF area east of the Foundry Building,

3. On the exterior surfaces, including on the concrete pavement, trenches and sumps in the AAF area as well as inside the adjacent open Polish Pits,
4. On the interior surfaces of the old cells, floors, and filtration equipment inside the east end of the Tank House,
5. In a large stockpile inside the DIS Building that contains approximately 4,000 tons of bulk, commercial grade scrubber sludge and on the surfaces of the interior of the building,
6. Approximately 200 tons in 100 supersacks stored inside the Receiving Building, and
7. Approximately 40,000 tons of a mix of scrubber sludge, soil, slag, scrap and debris stored in an open top concrete lined bunker on the north end of the site.

ii. Slag – An iron-silicate ceramic matrix, slag was generated as a by-product of the copper smelting operations over the 30 years of operation. The slag has toxic characteristics for lead and occasionally for cadmium based on TCLP. The slag has not exhibited toxic characteristics when subjected to analysis under SPLP. Over 1,000,000 tons of slag is estimated to be openly stockpiled on the site, primarily along the eastern boundary with the majority stockpiled in the northeast corner of the site. Slag is found in sizes from granular to over several feet in diameter.

iii. Cupro – Over 3,000 tons of a copper/nickel/lead slag by-product stockpiled inside the Foundry Building and outside on the west side of the building.

iv. Pot Slag – Over 300 tons of a copper slag by-product stockpiled inside the Foundry Building and outside on the west side of the building.

v. Furnace Charges and Cleanup Materials – Over 300 tons of various materials containing copper and lead scrap metal, scrubber sludge, slag, scrap iron, and debris located inside the Foundry Building and outside.

vi. Refractory Brick and Lining – Old refractory brick and lining exhibiting toxic characteristics for lead and cadmium are located inside the Foundry Building.

vii. Fuel Storage – The site has two 2500-gallon above ground storage tanks for diesel fuel and a 1000-gallon waste oil above ground storage tank located outside but inside sealed secondary containment.

viii. Lubricants, Oils and Antifreeze – Usually, several drums of one of these materials is found located outside the Mobile Shop but most is stored inside.

c. Stormwater Control

i. On-Site Control

1. **Evaporation** - The Estate has successfully used and will continue to use irrigation sprayers during warm weather to evaporate the stormwater on-site by spraying the stormwater from the lagoons/canals very high in the air and letting it impact the open concrete covered

areas of the site. During cold weather, natural evaporation is sufficient to control stormwater on the site.

2. **Inspection and Maintenance** – The Estate will continue to inspect and maintain the pumping system required to transfer stormwater about the site to keep lagoons/canals in balance.

ii. **Off-Site Perimeter Control –** The Estate has successfully used and will continue to use the perimeter drainage system connected to the Stormwater Basin to collect and direct the stormwater to the Stormwater Basin where it is monitored through the NPDES Permit.

d. **Contingency Procedures**

i. Emergency Contacts

1. Primary Contact — Eric Watt, Facility Manager
   Office: 618/254-4381 x230
   Cell: 618/444-0622

2. Secondary Contact — Gary Davis, EH&S Manager
   Office: 618/254-4381 x372
   Cell: 636/346-0413

ii. **Contingent Action**s

Event	Contingent Action
1. Overflow Off Site-no indication of scrubber sludge or other contaminates.	1. a. Document date, time, and estimate of flow rate, b. Divert overflow to another area of site, c. If not successful, notify EH&S Manager and collect samples of overflow water and store on ice or in refrigerator for EH&S Manager, d. EH&S Manager have samples analyzed.
2. Overflow Off Site- indication of scrubber sludge or other contaminates.	2. a. Same as 1. a.-d. above, b. Locate source of scrubber sludge contaminating stormwater, and c. Isolate and prevent stormwater from contacting scrubber sludge.

ATTACHMENT A1
SEAL ORDER

ATTACHMENT A2
SITE MAP

ATTACHMENT A3
NPDES PERMIT

ATTACHMENT A4
STORMWATER SAMPLING SPREADSHEET